

What is claimed and desired to be secured by Letters Patent is as follows:

1. An orthotic device comprising:

5 a base unit having an elongated support member, at least one support pad adjacently positioned on and attached to said support member, a fastening means attached to and extending from said support member to said support pad, and apertures bored through said support member capable of receiving fasteners therein;

10 said metacarpal unit having an internal pad mounted onto and projecting from an external casing and an attachment means fastened onto said external casing and capable of receiving and being attached to said internal pad; and

a hinge system connecting said base unit to said hand unit, said hinge system having a shell with an interior pad positioned on said shell and a plurality of apertures bored through said shell and capable of accepting fasteners therein.

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2. The orthotic device as recited in claim 1, wherein said base unit conforms substantially about a forearm of a user.

20 3. The orthotic device as recited in claim 1, wherein said elongated support member has at least one recess formed therein allowing said fastening means to access said support pad.

4. The orthotic device as recited in claim 1, wherein said elongated support member, said exterior shell and said external casing are made of a material selected

from the group consisting of: epoxy matrix carbon fiber, moldable carbon fiber, Kevlar composite material, plastic and thermoplastic material.

5 5. The orthotic device as recited in claim 1, wherein said at least one support pad, said interior pad and said internal pad being made of a material selected from the group consisting of: open cell foam, closed cell foam, cotton, a viscoelastic polymer-gel, liquid material, granular material and air material.

10 6. The orthotic device as recited in claim 1, wherein said at least one support pad, said interior pad and said internal pad further comprise a temperature control means being electrically connected to thermal heating coils embedded within each of said pads to provide warming heat to a user.

15 7. The orthotic device as recited in claim 1, wherein said at least one support pad, said interior pad and said internal pad further comprise a temperature control means being electrically connected to cooling coils embedded within each of said pads to provide a cooling effect to a user.

20 8. The orthotic device as recited in claim 1, wherein said apertures have reinforcements perpendicularly extending therefrom to surround said fasteners inserted through said apertures.

9. The orthotic device as recited in claim 1, where said support pad is detachably affixed on said support member, where said internal pad is removably attached on

said external casing, and where said interior pad is detachably fastened on said exterior shell.

5 10. The orthotic device as recited in claim 1, wherein said metacarpal unit swivels in a lateral fashion in relation to said hinge system.

11. The orthotic device as recited in claim 1, wherein said hinge system is capable of moving up to a 45° angle in an upward vertical fashion with respect to the base unit.

10 12. The orthotic device as recited in claim 1, wherein said hinge system is capable of moving at about 150° angle in a downward, flexing motion.

13. The orthotic device as recited in claim 1, wherein said elongated support member and said shell each have at least one stop formed thereon, wherein each of
15 said stop abuts one another to limit extension, flexion and ulnar-radial deviation.

14. A process of manufacturing an orthotic device comprising the steps of:
scanning and measuring a user's physiological area;
developing a mold for a base unit, metacarpal unit and hinge system based on
20 the user's measurements; and
fabricating said base unit, metacarpal unit and hinge system utilizing a wet lay-up process.

15. The process of manufacturing the orthotic device as recited in claim 14, wherein the wet lay-up process incorporates epoxy resin, carbon fiber and Kevlar composite materials during said process.